No. 643,422. Patented Feb. 13, 1900.

T. W. McFARLAND.

APPARATUS FOR MAKING PAPER OR PULP VEHICLE TOPS.

(Application filed Aug. 18, 1893.)

(No Model.)

Fig. 1.

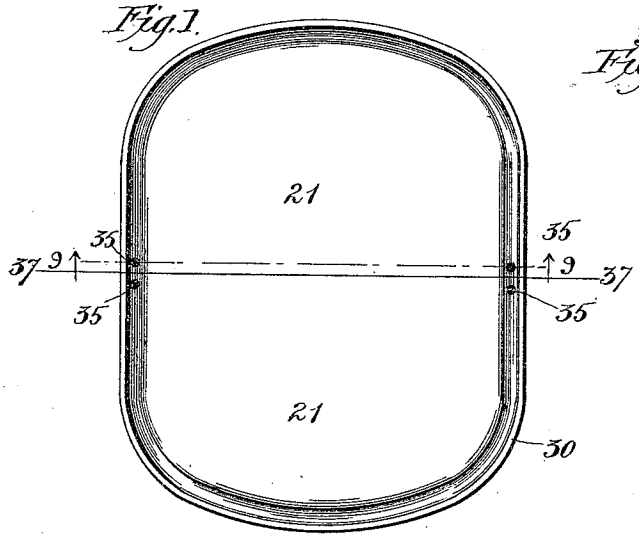


Fig. 3.

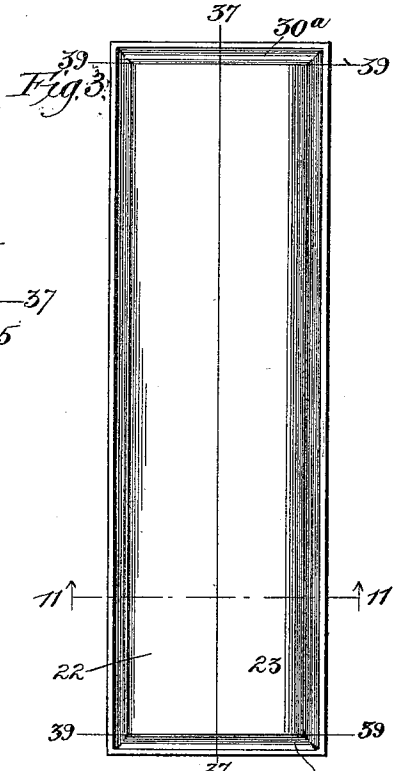


Fig. 2.

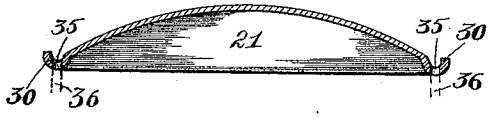


Fig. 4.

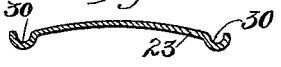


Fig. 5.

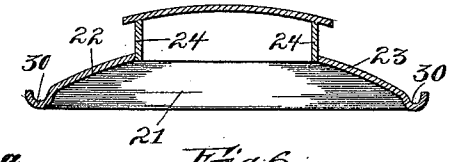
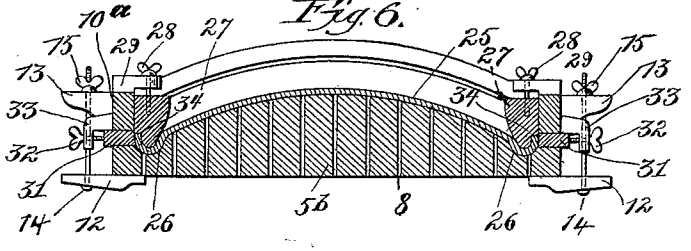


Fig. 6.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR MAKING PAPER OR PULP VEHICLE-TOPS.

SPECIFICATION forming part of Letters Patent No. 643,422, dated February 13, 1900.

Application filed August 18, 1893. Serial No. 483,588. (No model.)

To all whom it may concern:

Be it known that I, THOMAS W. McFARLAND, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Making Paper or Pulp Vehicle-Tops, of which the following is a specification.

My invention relates to improvements for producing elements for use in the construction of vehicles—such as the eaves and decks or roofs of cars, &c.—the same being molded from pulp or similar substances capable of being brought to a plastic or semiplastic state, such as the pulp ordinarily used in the manufacture of the coarser grades of paper or paper-board.

One object of my invention is to so hold the elements being molded against shrinkage that the surface or part intended to be exposed to view will not be pinched or impinged and may be subjected to the action of dressing or finishing implements and the drying influence of the atmosphere while on the mold.

A further object of my invention is to so form paper vehicle-tops that twisting or wrinkling of the same in any direction after leaving the mold or press will be avoided.

The attainment of these objects is attended with considerable difficulty, owing largely to the great tendency to crawl, warp, or shrink which the pulp exerts upon drying and which tendency not only causes the article to buckle and wrinkle or twist and lose its proper contour, but results in the reduction of its dimensions beyond usefulness.

With a view to avoiding these difficulties and attaining the said objects my invention consists in certain features of novelty shown in the accompanying drawings, fully described herein, and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a plan or top view of the eaves or end portions of a car-roof formed in duplicate. Fig. 2 is a transverse section thereof, taken on the line 9 9, Fig. 1. Fig. 3 is a view similar to Fig. 1, illustrating the two portions of the car roof or deck, which usually extend between the eaves or end portions shown in Fig. 1 and constitute those portions of the roof or deck extending from the edges of the car to the transom-walls, these elements also being formed in duplicate. Fig. 4 is a transverse section taken on the line 11 11, Fig. 3. Fig. 5 is a transverse sectional view of the upper portion or top of a car, showing the arrangement of the elements illustrated in Figs. 1 to 3 with reference to each other and to the transom-walls of the car; and Fig. 6 is a transverse sectional view of my improved apparatus or mold possessing certain features which adapt it particularly for producing the concaved flange or gutter around the edges of the elements shown in Figs. 1 to 5.

It is common in the art of paper-making to produce flat panels or boards from fiber pulp by pressing the same between flat plates while drying or curing; but while this method may be appropriate for this purpose where the dimensions of the panel to be produced are immaterial it is readily seen, nevertheless, that it is totally inadequate for the production of a carriage or vehicle top or any other article, such as the deck or eaves of a car, which must be of certain predetermined dimensions and design or contour, because of the fact, as before mentioned, that the board will crawl or shrink even while clamped between the plates in the described manner. In order to avoid this difficulty and produce a paper-board element for use in the construction of vehicles—such as a car deck or roof, &c.—in a single piece without seams or joints, I first form or build up what is known in the art as a "blanket" or "green board" of the requisite size and thickness, if desired, directly upon a form or block or other mold which has the contour of the article to be produced. While the board or blanket is on this form, I smooth or finish its outer surface in any well-known or desirable way, and thus also cause it to fully conform to the block, and before or immediately after this has been done I turn the edges of the board or blanket down in the shape of a flange or gutter and clamp the latter firmly in place, thus effectively holding the board or blanket from crawling or shrinking during the drying or curing operation. After this has been done the whole may be set aside, and the blanket or board is allowed to remain clamped on the form in this manner until thoroughly cured or at least until the danger of shinkage or

warping has passed. The surrounding flange or gutter produced by turning down the edges of the board or blanket will prevent it from warping in any direction after it is removed from the mold or form.

The advantage of my above-described method of securing the green board or blanket against shrinkage is that its edges being turned down at an angle to the board or blanket proper it may be held with much less force, and, furthermore, I avoid "pinching" the outer surface of the board or article proper, and by that I mean the formation of an objectionable crease or channel therein, and by thus avoiding the pinching of the surface to be exposed in the finished article I leave such surface fully subjected to the drying influence of the atmosphere and also free to be operated upon by the finishing or dressing implements. Still furthermore, the resulting flange around the edges of the article produced, if it be a carriage-top or other similar element, may be put to a useful purpose in the construction of the vehicle and will serve to prevent warping or twisting of the top after it is removed from the form. When the drying has been fully effected, the flange produced by turning down the edges of the board may, if desired, be trimmed off; but ordinarily such flange would be retained, as it may be turned to a useful purpose in the construction of the vehicle. When the element produced is designed for use in the construction of a car-roof, the flange may be so formed as to constitute a gutter for carrying off rain-water falling on the car.

Referring to Fig. 1, 21 represents the two end portions or eaves of a car-roof of the form usually employed on the ordinary street-car, which overhang the two end platforms and which usually curve upward from their sides and outer ends, as shown in Fig. 2, so as to shed the water and join with the main portion of the car roof or deck.

22 23, Figs. 3, 4, and 5, represent the two side pieces, which constitute those portions of the deck or roof of the car which extend downwardly from the lower edges of the transom-walls 24 and also join at their ends with the inner ends of the elements or eaves 21, the portions 22, 23, and 21 being usually struck on the same arc, so that their edges will match when put together, as will be understood.

In producing the elements 21 22 23 I place the paper board or pulp (represented by the sign 25, Fig. 6, and which in this figure may be considered the cross-section of the elements shown in either Fig. 1 or Fig. 3) upon a block or form 5^b, whose general shape or contour will depend entirely upon the shape of the elements to be produced—that is to say, if it is desired to produce the side members or elements 22 23 of the deck, which are cylindrical, the block 5^b would be curved in but one direction, while for producing the eaves 21 (shown in Fig. 1) it would be curved from side to side and end to end. In any event, however, the block is provided on all sides with a surrounding depression or groove 26, formed near the outer edge thereof and into which the edges of the board are pressed, whereby they may be gripped more tightly during the drying or curing of the board. As an effective and convenient means of forcing the edges of the board 25 into this depression 26 and tightly clamping them and at the same time providing the flange formed on the board with a regular or finished edge, I employ a frame 10^a, which completely surrounds the groove or depression 26 and is provided with two independently-movable sections arranged to move at an angle to each other. One of these sections 27 is supported and actuated by means of a number of set-screws 28, secured rotatably in brackets 29, formed on the frame 10^a and having their ends threaded in the section 27, whereby the manipulation of such set-screws will cause the section 27 to rise and fall and tightly impinge the edges of the board 25. The lower edge of this section 27 is complementary in shape to but slightly smaller than the groove or depression 26, so as to fit snugly against the upper side of the board 25 and form the interior of the concaved flange or gutter 30 around the edge of the board. The other, 31, of these movable sections is arranged to move laterally or substantially at right angles to the line of movement of the section 27, and it also may be actuated by means of set-screws 32, secured in brackets 33, depending from the outer side of the frame 10^a. This section 31 completely surrounds the block 5^b and rests between the lower edge of the frame 10^a and the upper edge of the block, as shown, the section 31 of course being formed in a number of parts, so as to permit it to move in and out. When the board 25 is first placed upon the block 5^b, its extreme outer edges will of course overlap the depression 26 and extend under the frame 10^a, the section 31 at this time being in its outer position. The section 27 is then forced downward to cause the edges of the board to conform to the depression 26, and after the requisite pressure in the downward direction has been effected or simultaneously with the production of such downward pressure the section 31 is forced inward, so as to set up the extreme edges of the flange or gutter 30 and force the latter firmly against the outer side of the section 27, the lower edge of the section 27 on the outer side being provided with a shoulder 34, under which the upper edge of the gutter 30 is forced by the section 31, thus compressing the edge of the gutter in all directions and providing it with a finished or even surface. After the parts have been adjusted to the position shown in Fig. 6 the whole frame 10^a, with its sections 27 31, may be tightly clamped to the block 5^b by means of thumb-taps 15, threaded on bolts 14, passing through brackets 12 13, secured to the block 5^b and frame 10, respectively, and thus by the proper manipulation of the

proper set-screws and thumb-taps described the edges of the board may be firmly and neatly clamped and provided with the finished gutter 30. The gutter 30 thus formed on the elements 21 22 23 serves an additional useful purpose in collecting and carrying off the rain-water falling on the roof and which ordinarily drips onto the platform of the car from the end eaves and onto the side steps or running-boards of open cars from the side eaves or decks. To the end that the drip may be conducted away from the gutter 30, the gutter on one or both sides of the car may be provided with a discharge-opening 35, into which, if desired, a suitable spout 36, as shown in dotted lines in Fig. 2, may be inserted.

When producing the elements 21 21 or 22 23, I employ a block 5^b, whose contour shall be such as to produce these elements in duplicate—that is to say, produce two of them in one piece, as shown in Figs. 1 and 3. After the elements, whether they be the eaves 21 21 or the deck-pieces 22 23, are removed from the block or mold they may be cut apart on the lines 37 37; but it is desirable to keep them in one piece until ready for use, because while thus completely surrounded with the concave flange or gutter 30 all warping in any direction is absolutely precluded, and the articles may be stored away without liability of damage to the unprotected edges produced by severing them on the lines 37. The end flanges or gutters 30^a on the deck-pieces 22 23, however, only serve to prevent shrinkage during the drying operation and warping after the article is removed from the mold, and hence before incorporating these parts in the roof of the car the said end flanges 30^a are sawed off on the lines 39, so as to present a curved edge, as shown in Fig. 4, which will fit against and match the inner ends or edges of the eaves 21.

What I claim is—

1. In an apparatus for producing vehicle-tops, the combination of a form having the contour of the top to be produced, upon which the green board or blanket may be placed, and a rim or holding-flange adapted to be forced down over the edges of said board or blanket and crowd the same against the edges of said form, and said rim or flange being provided with auxiliary means for impinging the edge of the board or blanket, substantially as set forth.

2. The herein-described mold for producing vehicle-tops, having a number of independent sections adapted to clamp the edge of a plastic or pliable board, said sections being movable at an angle to one another so as to compress the edge of the board into the form of a flange, substantially as set forth.

3. An apparatus for molding vehicle-tops of paper pulp or board, having in combination a perforated bed or block having a marginal groove therein, a skeleton frame adapted to fit over said block and engaging in said groove, means for clamping said frame and block together, and independently-adjustable clamping-strips movable to and from the sides of said clamping-frame, substantially as set forth.

4. An apparatus for molding vehicle-tops of paper pulp or board, having in combination a perforated block or bed provided with a marginal groove, a skeleton clamping-frame fitting upon said block and engaging in said groove and having the shoulders 34, means for pulling said frame downward against said block and into said groove, and independently-adjustable strips 31 arranged opposite said shoulders 34 and adapted to impinge the edge of the article being molded, substantially as set forth.

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